

Amendments to the CLAIMS:

The listing of claims will replace all prior versions and listings, of claims in the instant application:

Listing of Claims

Claims 1-137 (Previously Cancelled)

Claims 138-172 (Currently Cancelled)

173. (NEW) A method of identifying a compound that putatively enhances, inhibits, or elicits bitter taste in a human subject comprising (1) screening one or more compounds in a screening assay which identifies compounds that specifically bind to or inhibit the specific binding of a ligand to a human T2R61 taste receptor polypeptide, wherein said T2R61 taste receptor polypeptide is selected from the group consisting of: (a) a T2R61 polypeptide comprising the sequence contained in SEQ ID NO:8; (b) a T2R61 polypeptide having at least 95% sequence identity to the polypeptide contained in SEQ ID NO:8 that specifically binds a ligand bound by the T2R61 polypeptide contained in SEQ ID NO:8; (c) a T2R61 polypeptide encoded by the nucleic acid sequence that hybridizes under stringent hybridization conditions to the nucleic acid sequence in SEQ ID NO:7 wherein stringent hybridization conditions are hybridization in 5XSSC, 1% SDS, incubation at 65 degrees C and wash in 2XSSC and 0.1% SDS at 65 degrees C and which T2R61 polypeptide specifically binds to a ligand that is specifically bound by the T2R61

polypeptide contained in SEQ ID NO:8, and (2) identifying a compound as putatively enhancing, inhibiting or eliciting a T2R61 associated bitter taste sensation in a human subject based on its specific binding to a human T2R61 polypeptide according to (a), (b) or (c) or its modulation (inhibition or enhancement) of the specific binding of another ligand to a T2R polypeptide according to (a), (b) or (c).

174. (NEW) The method of claim 173, wherein the human T2R61 polypeptide has the sequence contained in SEQ ID NO:8.

175. (NEW) The method of claim 173 wherein the T2R61 polypeptide possesses at least 95% sequence identity to the T2R61 polypeptide contained in SEQ ID NO:8.

176. (NEW) The method of claim 173 wherein the T2R61 polypeptide is encoded by a nucleic acid sequence that hybridizes to SEQ ID NO:7 according to stringent hybridization conditions as set forth in (c).

177. (NEW) The method of claim 173 wherein the T2R61 polypeptide possesses at least 96% sequence identity to the polypeptide contained in SEQ ID NO:8.

178. (NEW) The method of claim 173 wherein the T2R61 polypeptide possess at least 97% sequence identity to the T2R61 polypeptide contained in SEQ ID NO:8.

179. (NEW) The method of claim 173 wherein the T2R61 polypeptide possesses at least 98% sequence identity to the T2R61 polypeptide contained in SEQ ID NO:8.

180. (NEW) The method of claim 173 wherein the T2R61 polypeptide possesses at least 99% sequence identity to the T2R61 polypeptide contained in SEQ ID NO:8.

181. (NEW) The method of claim 173 wherein the T2R61 polypeptide is in solution.

182. (NEW) The method of claim 173 wherein the T2R61 polypeptide is attached to a solid phase.

183. (NEW) The method of claim 173 wherein the T2R61 polypeptide is in a lipid bilayer or vesicle.

184. (NEW) The method of claim 173 wherein the T2R61 polypeptide is expressed by a cell.

185. (NEW) The method of claim 184 wherein the cell is a eukaryotic cell.

186. (NEW) The method of claim 184 wherein the cell is a mammalian cell.

187. (NEW) The method of claim 183 wherein the cell is a bacterial, yeast, amphibian or mammalian cell.

188. (NEW) The method of claim 183 wherein the cell is a CHO, COS, HEK-293 cell or a Xenopus oocyte.

189. (NEW) The method of claim 173 wherein the binding of the compound is detected by assaying for changes in conformation of said T2R polypeptide.

190. (NEW) The method of claim 189 wherein said changes are detected by NMR spectroscopy.

191. (NEW) The method of claim 189 wherein the changes in conformation are detected by fluorescence spectroscopy.

192. (NEW) The method of claim 183 wherein the cell also expresses a G protein that functionally couples to said T2R polypeptide.

193. (NEW) The method of claim 192 wherein said G protein is Galphai6, Galphai6 or gustducin.

194. (NEW) The method of claim 173 wherein binding of a compound to said T2R polypeptide is detected using a fluorescently or radioactively labeled ligand.

195. (NEW) The method of claim 194 wherein the method detects displacement of the labeled ligand from said T2R polypeptide by fluorescence polarization or a FRET assay.

196. (NEW) The method of claim 192 wherein said G protein is a promiscuous G protein.

197. (NEW) The assay of claim 173 wherein the assay for identifying a compound which modulates a human T2R61 detects a compound that specifically responds to bitter ligand by a method which comprises:

- i. screening a compound for its effect on the activation of said hT2R61 polypeptide and
- ii. determining whether said compound modulates hT2R61 associated bitter taste based on its effect on the activation of said receptor.

198. (NEW) The assay of Claim 197 wherein said hT2R61 has the amino acid sequence contained in SEQ ID NO: 8.

199. (NEW) The assay of claim 197 wherein said taste receptor is expressed on a cell or cell membrane.

200. (NEW) The assay of Claim 197 wherein said taste receptor is expressed on an isolated cell membrane.

201. (NEW) The assay of Claim 197 wherein said taste receptor is expressed on an intact cell.

202. (NEW) The assay of Claim 197 wherein said taste receptor is expressed by a eukaryotic cell.

203. (NEW) The assay of Claim 197 wherein said taste receptor is expressed by an amphibian, mammalian or insect cell.

204. (NEW) The assay of Claim 203 wherein said taste receptor is expressed by a cell selected from an HEK293, BHK, C0S, HEK293T, CHO and Xenopus oocyte.

205. (NEW) The assay of Claim 197 which is a fluorimetric assay.

206. (NEW) The assay of Claim 197 which is a binding assay.

207. (NEW) The assay of Claim 197 which detects the effect on said compound by assaying its effect on an intracellular ion concentration.

208. (NEW) The assay of Claim 197 which detects the effect of said compound on intracellular sodium or calcium.

209. (NEW) The assay of Claim 197 which detects the effect of said compound on cell membrane potential.

210. (NEW) The assay of Claim 197 which detects the effect of said compound on the transcription of said taste receptor.

211. (NEW) The assay of Claim 197 wherein in said compound is selected based on its ability to block interaction of said taste receptor with a bitter ligand.

212. (NEW) The assay of Claim 197 which detects the effect of said compound on intracellular cAMP, cGMP or IP3.

213. (NEW) The assay of Claim 197 wherein said taste receptor comprises the extracellular domain or transmembrane region of said taste receptor.

214. (NEW) The assay of Claim 197 wherein said assay detects changes in calcium using a calcium specific fluorescent dye.

215. (NEW) The assay of Claim 197 wherein said assay detects changes in intracellular calcium using a dye selected from Fluo-3, Fluo-4 and Fura-2.

216. (NEW) The assay of Claim 197 wherein said taste receptor is in solution.

217. (NEW) The assay of Claim 197 which is a binding assay that detects changes in spectroscopic characteristics, hydrodynamic characteristics or solubility.

218. (NEW) The assay of Claim 197 which detects the effect of said compound on the complexing of said taste receptor with a G protein.

219. (NEW) The assay of Claim 197 which detects the effect of said compound on the complexing of said taste receptor with a G protein selected from transducin, gustducin, G α 15, G α 16. or a chimera thereof.

220. (NEW) The assay of Claim 197 which is a fluorescence polarization assay.

221. (NEW) The assay of Claim 197 wherein said taste receptor is attached to a solid phase substrate.

222. (NEW) The assay of Claim 197 which is a high throughput assay.
223. (NEW) The assay of Claim 197 wherein the taste receptor is expressed by a HEK293 cell.